

Claims

[c1] **What is claimed:**

1. A medical imaging scanner system comprising:
a medical imaging scanner configured to scan an imaging subject within an imaging area, wherein the medical imaging scanner emits system noise when in operation;
and
an emitter system constructed to emit an inaudible signal having properties to reduce perception of the system noise about at least a portion of the imaging area.

[c2] 2. The medical imaging scanner system of claim 1 further comprising a parametric sound generator configured to generate a signal having properties to reduce perception of the system noise.

[c3] 3. The medical imaging scanner system of claim 1 wherein the medical imaging scanner is a magnetic resonance image scanner and the emitter system is arranged outside of a magnetic field of the magnetic resonance image scanner.

[c4] 4. The medical imaging scanner system of claim 1 wherein the emitter system includes an ultrasonic emit-

ter capable of columnular emissions.

- [c5] 5.The medical imaging scanner system of claim 4 wherein the ultrasonic emitter is mounted external to the medical imaging scanner.
- [c6] 6.The medical imaging scanner system of claim 4 wherein the ultrasonic emitter is arranged such that the columnular emissions are directed at a location to provide an imaging subject with a substantially noise free environment.
- [c7] 7.The medical imaging scanner system of claim 1 wherein at least a portion of the emitter system is arranged a distance from the imaging area.
- [c8] 8.The medical imaging scanner system of claim 1 wherein the emitter system is directed toward at least one of the imaging subject area and an operator area.
- [c9] 9.The medical imaging scanner system of claim 1 further comprising another emitter system constructed to reduce perception of system noise about at least a portion of an operator area.
- [c10] 10.The medical imaging scanner system of claim 1 wherein the emitter system is configured to directionally emit the inaudible signal.

- [c11] 11. The medical imaging scanner of claim 1 wherein the system noise reduction occurs near an imaging subject's ears.
- [c12] 12. The medical imaging scanner system of claim 1 wherein the emitter system includes an emitter that produces a column of ultrasonic energy in front of the emitter that contains properties to produce cancellation audio frequencies when intermixed with a non-linear medium.
- [c13] 13. The medical imaging scanner system of claim 12 wherein the non-linear medium includes atmospheric air.
- [c14] 14. The medical imaging scanner system of claim 12 wherein the cancellation audio frequencies are demodulated along the column of ultrasonic energy.
- [c15] 15. The medical imaging scanner system of claim 14 wherein the demodulated cancellation audio frequencies interact with the system noise to reduce perceivable system noise at the imaging area.
- [c16] 16. The medical imaging scanner system of claim 15 wherein the imaging area is an area of imaging subject sound reception.

- [c17] 17. The medical imaging scanner system of claim 1 wherein the system noise is reduced as perceived by an imaging subject during a scanning operation.
- [c18] 18. A method of medical imaging comprising:
 - performing a medical imaging process upon an imaging subject, wherein the medical imaging process produces a noise byproduct; and
 - emitting an inaudible signal configured to diminish auditory perception of the noise byproduct.
- [c19] 19. The method of claim 18 further comprising performing the medical imaging process on an imaging volume and emitting the inaudible signal outside of the imaging volume.
- [c20] 20. The method of claim 18 further comprising columnly emitting the inaudible signal to diminish auditory perception of the noise byproduct within a selected volume.
- [c21] 21. The method of claim 20 wherein the selected volume includes one of an imaging volume and an operating volume.
- [c22] 22. The method of claim 18 further comprising producing a column of ultrasonic energy configured to interact with atmospheric air to produce anti-noise audio frequencies

when intermixed with an environmental air.

[c23] 23.The method of claim 18 wherein the medical imaging process includes a magnetic imaging resonance imaging process.

[c24] 24.An MRI apparatus comprising:
an MRI system having a plurality of gradient coils positioned about a bore of a polarizing magnet to impress a polarizing magnetic field, and an RF transceiver system and an RF switch controlled by a pulse module to transmit RF signals to an RF coil assembly to acquire MR images; and
a parametric signal generator configured to generate ultrasonic signals to reduce perception of noise produced by the MRI system during operation.

[c25] 25.The MRI apparatus of claim 24 wherein the ultrasonic signals are configured to induce anti-noise signals upon interaction with environmental air.

[c26] 26.The MRI apparatus of claim 25 wherein the anti-noise signals are contained within a propagation column.

[c27] 27.The MRI apparatus of claim 26 wherein the propagation column is focused on at least one of an operator area and the bore of the polarizing magnet.

- [c28] 28.The MRI apparatus of claim 24 wherein the ultrasonic signals contain modulated ultrasonic audio frequencies configured to generate demodulated cancellation audio frequencies upon interacting with a nonlinear medium.
- [c29] 29.The MRI apparatus of claim 28 wherein the demodulated cancellation audio frequencies interact with noise produced by the MRI system to reduce perception of the noise.
- [c30] 30.The MRI apparatus of claim 24 wherein the parametric signal generator is disposed remotely from the MRI system.
- [c31] 31.The MRI apparatus of claim 24 further comprising an emitter configured to deliver an ultrasonic signal to at least a portion of the MRI system.